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PHYSICAL TRAINING.

CARL J. KROH AND CAROLINE CRAWFORD.

GENERAL GYMNASTICS.¹

CARL J. KROH.

THE practical work in general gymnastics embraces three distinct courses, as follows :

I. An elementary course designed to meet the needs of those primary and grammar teachers who are anxious to introduce gymnastics into their schools, and who would familiarize themselves with the best methods of conducting physical exercises.

II. A course arranged for teachers with experience in teaching gymnastics, and who are desirous to extend the scope of their work in the direction of greater effectiveness through a study of the progressive difficulties characteristic of general gymnastics and their adaptation under varying conditions.

III. A course for teachers and students qualifying for advanced work in all forms of gymnastics.

I. ELEMENTARY COURSE.

General and specific aims of elementary school gymnastics. Normal functional activity, health ; symmetrical development ; concentration of mind upon purposive action. An educational discipline.

Growth and development during the school age. Tendencies, as indicated in posture, standing, sitting, and walking ; study of characteristic movement-forms. Analysis. Free exercises—an efficient means of body-building ; fundamental to all gymnastic procedure. The cultivation of proper movement concepts. Preliminary steps in ordered procedure. Selection of appropriate movement-forms and exercises ; development of typical and use of auxiliary forms. Order of progress as determined by perceptible results. Methods of illustration and direction. Use of commands.

Tactics.—Individual, group, and class practice, to facilitate concerted movement. Formations ; positions ; alignments. Modes of movement in and from place. Methods and order of division ; distancing, and massing. Time—step, rhythm. Commands.

¹ The various courses outlined have been arranged with the purpose in view of facilitating the work in general. Attention is therefore directed to the distinctions made under general gymnastics and special physical training, designed for remedial purposes.

Free gymnastics.—Order of movement-forms and exercises constituting regular and complete outlines. Exercises for the improvement of bearing, carriage; the cultivation of poise. Active chest work; accentuation of proper lines of chest and back development. Emphasis of co-ordinative power; combined simple and complex exercises. Exercises to reinforce design of preceding work; to strengthen waist muscles. Running and springing exercises, designed as part of the regular lesson order. Exercises for moderating effects of preceding work. Respiratory exercises and their use.

The construction and adaptation of free exercises. Mechanical laws governing positions, equilibrium; gradation of muscular resistance in motion and locomotion. Weight, force, space; leverage. Age; sex; temperament. Estimates of condition, energy; control, skill.

*Plays and games.*¹—Imitation games, based on sense-perceptions; for lowering reaction time between definite perceptions and actions; for ability to recognize advantages and to follow most practical procedure—reaction of one of several sense-perceptions through most practical action suggested. Games requiring quick discernment, judgment, action. Characteristic school games, for boys and girls.

Two courses; three weeks each. Time, 9:30.

II. SUPPLEMENTARY COURSE.

Tactics.—Economy of movement; co-operation for definite purposes in (1) free gymnastics, (2) apparatus work, (3) games and plays, (4) tacto-gymnastic exercises and gymnastic dancing. Orders of formations, re-formations, and transformations, involving massing, distancing, and evasion, by stepping, marching, halting, and turning, according to fundamental rules.

*Free exercises.*²—Emphasis of distinct and progressive grade aims. Factors determinative in a selection of exercises; modifications of orders, form and kind—construction; appropriate demands in co-ordinate activities. Importance of movement-forms occurring in forms of applied gymnastics. Systematic practice of typical running and springing exercises, preparatory to elementary apparatus and field work. Movements and exercises in kneeling, sitting, lying, and stem-supporting positions. Tacto-gymnastic exercises. Dancing calisthenics.

Instruction; training.—Distinction between healthful, orderly, and pleasurable gymnastic training, formal drill and mere pleasurable activity for the sake of recreation. General effects of gymnastics upon school work; health. Comparisons of class and group work; general movement, mass work; control and attention. Suggested appropriate and interdicted forms of exercise. School and home gymnastics.

¹For play-action in story form, descriptive action with music or song accompaniment, adapted to the smallest folks—see kindergarten courses.

²A review of the fundamental procedures represented in the adaptations of the elementary course will precede the work of this course.

Applied resistance.—Specific dumb-bell and wand exercises; extension exercises with elastic bands; use of balls, sacks, etc.; pole and ring exercises; Indian club-swinging exercises.

Elementary apparatus gymnastics.—Practical equipments. Methods of class work; group work. Gradation of pupils. Development of jumping, vaulting, and climbing exercises; uses of jumping apparatus, vaulting machines, vertical and slant ropes and poles; horizontal, slant, and vertical ladders, bars, etc.

School and field games.—Active, passive, and rest games. Games for the promotion of heart and lung action; active outdoor running games requiring most physical activity. Gymnastic plays for the cultivation of the play-spirit; pleasure in moderate action; short competitive games. Games requiring superior physical and mental qualities; the exercise of skill, dexterity, the qualities of endurance. Time, 11:30.

III. ADVANCED COURSE.

This course will present a survey of progressively arranged material under the following heads of general gymnastics: (1) tactics; (2) free gymnastics; (3) light gymnastics—hand apparatus; (4) apparatus gymnastics; (5) games, plays, sports; antagonistics; (6) athletics; (7) special work—fencing, etc.; (8) remedial work.

Under "tactics" is included a study of the relative positions and movements of the individual and the group; the composition of gymnastic marches and roundel figures.

In free exercises and tacto-gymnastics, as well as in apparatus gymnastics, the German method of conducting class and group work will be illustrated.

The development of the higher organized gymnastic games, with especial reference to their adaptability to all grades, will form a part of the regular program.

Athletics, outdoor exercises, field sports, antagonistics, will be considered with reference to their legitimate uses on the school grounds.

Defensive exercises, as fencing and boxing, preparatory to special practice, are included under I, II, and III.

Work designated assistive, resistive, co-operative, as physical work without apparatus, implies the reliance of gymnasts upon each other in the execution of exercises; assistance or resistance being required of one or the other, or several—according to the purpose intended. The substitution of pupils in lieu of gymnastic apparatus includes work under this head.

Æsthetic, "artistic" gymnastics find their highest expression in gymnastic compositions and "roundels," suggestive of interesting "themes." They include tactics and activities illustrative of definite gymnastic thought, generally accompanied by music or singing.

Fancy steps are derivations of the forms of exercise occurring under I and II, with rhythmic changes in execution. In their execution the body as

a whole participates, as in walking, gliding, skipping, hopping, bounding, etc. They are considered in their regular place in the order of adaptations.

Remedial work, a special form of work, is applied to defective and nervous children. As corrective work, it includes work for most ordinary defects, superinduced by forced durance in schools, etc. It consists of movements, free exercises, standing, sitting, lying; of assistive and resistive work, carefully adapted and prescribed with reference to individual needs.

The psycho-physiological order and pedagogical values of the work will be discussed and in a measure ascertained through demonstrations in class work. The study of new and complete co-ordination problems occurring in advanced free and light gymnastics, as well as apparatus work, will be based on the orders determined in these demonstrations. The practical means of determining individual needs and qualifications will be ascertained in the study of characteristic types. The values of physical exercises with reference to their classification and character, *i. e.*, as exercises of strength, dexterity, swiftness, endurance, attention, address, etc., will be outlined. Equipment plans for schools, playgrounds, and gymnasia will be presented, and the organization and regulation of gymnastics discussed. Time, 1:30.

MODEL-SCHOOL COURSE.

The grammar-grade work will embrace free-standing exercises, illustrating the different methods of gymnastic development. Appropriate procedures with references to demands, as warranted by the pupil's proficiency and power to follow gymnastic development, will be a distinct feature of the series.

The gymnasium work will be characteristic of work for boys as well as girls, and of work adapted to mixed classes. It will include free-standing, marching, and running exercises; ditto with use of hand apparatus, as poles, wands, dumb-bells, Indian clubs, sacks, etc.; also elementary-school gymnastics on apparatus, ladders, poles, rings, bars, etc.; the development of jumping and vaulting exercises on vaulting apparatus. Lessons in the gymnasium conclude with appropriate games and plays.

Teachers merely in quest of personal improvement and recreation, who wish to avail themselves of the opportunities offered in part periods of the supplementary and advanced courses, have the privilege of forming special groups and thus entering into the active physical training and recreative work of these courses. Participants are required to wear the regulation gymnasium costume, blouse and divided skirt (dark flannel preferred), for

ladies. All pupils, boys and men, must be provided with gymnasium slippers.

INDIVIDUAL GYMNASTICS, PRIMARY GYMNASTICS, AND DANCING.

CAROLINE CRAWFORD.

STUDY OF INDIVIDUAL CHILD.

FOR the general teacher, the problem in physical education is to become acquainted with the normal growth and development of the child, and also with the environment which will best promote that growth and development. The more definite such knowledge is, the greater its value becomes. General statements are often misleading, because the limitations that must be drawn in the application of such study to the biology of school life are not known. The present conditions under which physical training is taught are such that what might be accomplished directly through the training is thwarted by the school and home environment, which often tends to retard growth. The following outline is given as a guide for the work of the course. It is not to be considered complete. Certain parts will be emphasized, and other parts suggested for future study.

I. THE CHILD.

1. *Anatomy*.—(a) Skeletal anatomy, including the gross structure and arrangement of the bones and joints. (b) Muscular anatomy, including the larger muscles of the body, attachment and work.

2. *Physiological physics*.—(a) Measurement of force. (b) Action of gravity on body. (c) Levers of body. (d) Study of levers and applied power. (e) Standing. (f) Animal motion—walking, etc.

3. *Nutrition*.—(a) Air, quantity and quality. (b) Water, quantity and quality. (c) Food, quantity and quality. Amount of food for age.¹ The following table is given as a basis for study:

AGE.	PROTEID.		FAT.		CARBOHYDRATE.	
	Grams	Ounces	Grams	Ounces	Grams	Ounces
5 yrs.	56	2	43	1.5	145	5.1
8-9 yrs.	57.44	2.05	45	1.6	150	5.3
12-13 yrs.	67.56	2.4	48	1.7	245	8.7
14-15 yrs.	79	2.8	48	1.7	270	9.6

¹ From UFFELMANN, *Domestic Hygiene of the Child*.

4. *Normal body for age.*—(a) Study of measurements. (b) Laws of growth and development. (c) Physiology of bodily exercise.

5. *Application of the laws of growth and development.*—(a) Work. (b) Fatigue. (c) Rest. (d) Recuperation.

6. *Physical defects.*—(a) Causes : in home life ; in school life. (b) Effects : physique ; retarded growth. (c) Remedies. The photographs in the April COURSE OF STUDY show defects which are both the result of the environment and also of the teacher's lack of appreciation of the effect of gravity on the body when standing and sitting.

7. *Standing.*—(a) Analysis of position. (b) Muscles used in standing. (c) Effect of gravity on body when standing.

8. *Position of body for motor work.*—(a) Reading. (b) Writing. (c) Singing.

9. *Sense organs.*—(a) Eyes. (b) Ears. Diagnosis of abnormal organs is not required, but the abnormal sense should be recognized, and means taken to have the best possible condition produced. As the throat plays so important a part in reading and singing, the same treatment applies to it as to the eyes and ears.

II. THE ENVIRONMENT—SCHOOL HYGIENE.

1. *Location of building.*—Soil.

2. *Seating.*—(a) Kinds of seats. (b) Measurements for seats.

3. *Heating and ventilation.*—(a) Air tests (see science outline). (b) Problems in practical ventilation.

4. *Lighting.*

5. *School diseases.*—(a) Contagious. (b) Chronic. (c) Nervous. Symptoms of chronic and nervous diseases. Contagious diseases are not under the teacher's care.

PRIMARY GYMNASTICS.

I. Games and plays adapted to children of the first grades.

II. Study of dance steps that little children can learn, and combinations of marching and dancing.

III. Greek sports. (1) Running. (2) Jumping. (3) Hurdling. (4) Vaulting. (5) Throwing.

DANCING AND GYMNASTIC DANCING.

I. Study of positions and steps.

II. Study of combinations of steps to form the dance.

III. Study of dancing for gymnastics. An opportunity will be offered all in this course for a daily practice hour under the direction of a competent assistant.

REFERENCES.

ANATOMY AND PHYSIOLOGICAL PHYSICS.

Gray, *Anatomy*; Morris, ed., *Human Anatomy*; Daniell, *Physics for Students of Medicine*; Draper, *Text-Book of Medical Physics*; Robertson, *Elements of Physiological Physics*; Marey, *Animal Mechanism*; Pettigrew, *Animal Locomotion*.

FOOD AND NUTRITION.

Atwater and Benedict, *U. S. Experiment Station Bulletin*, No. 69, "Experiments on the Metabolism of Matter and Energy in the Human Body;" Atwater and Langworthy, *U. S. Experiment Station Bulletin*, No. 45, "Digest of Metabolism Experiments in Which the Balance of Income and Outgo was Determined;" Atwater and Rosa, *U. S. Experiment Station Bulletin*, No. 63, "Description of a New Respiration Calorimeter, and Experiments on the Conservation of Energy in the Human Body;" Atwater, Woods, and Benedict, *U. S. Experiment Station Bulletin*, No. 44, "Report of Preliminary Investigations on the Metabolism of Nitrogen and Carbon in the Human Organism;" Faries, *Practical Training for Athletics, Health, and Pleasure*, pp. 71-81, "Food, Nutrition, and Digestion;" Farquharson, *School Hygiene and Diseases Incidental to School Life*, pp. 37-73, "Food: School Diet;" Foster, *Text-Book of Physiology*, pp. 379-886, "Tissues of Chemical Action with Their Re-Mechanisms;" Foster and Shore, *Physiology for Beginners*, pp. 128-51, "Digestion: Food;" Howell, ed., *American Text Book of Physiology*, pp. 215-306, "Chemistry of Digestion and Nutrition;" Huxley, *Lessons in Elementary Physiology*, pp. 143-68, "Food, Nutrition and Digestion;" Jordan and Hall, *U. S. Experiment Station Bulletin*, No. 77, "Digestibility of American Feeding Stuff;" Lincoln, *School and Industrial Hygiene*, pp. 19-23, "Food;" New York State Reformatory (Elmira), *Eighteenth Year Book*, "Dietary Studies," with tables and suggestions; Parkes, *Manual of Practical Hygiene*: "Food," pp. 203-24; "Quality, Choice and Cooking of Food," pp. 225-90; "Beverages and Condiments," pp. 294-368; Pilcher, *First Aid in Illness and Injury*, pp. 70-76, "Digestion;" Richards, *Cost of Living as Modified by Sanitary Science*, pp. 65-81, "Food;" Thompson, *Practical Dietetics*; Uffelmann, *Manual of Domestic Hygiene of the Child*, pp. 13-109, "Food and Nutrition;" Waller, *Introduction to Human Physiology*, pp. 248-89, "Food, Nutrition and Excretion."

ANTHROPOMETRY.

Berthold, *Twentieth Year Book of the New York State Reformatory*, "Anthropology," tables of measurements; also tables of measurements in Appendix of *Twenty-first Year Book*; Galton, *Hereditary Genius*, "Heredity;" also *Natural Inheritance*, "Heredity;" Hall, *Changes in the Proportions of the Human Body During the Period of Growth*; New York State Reformatory, *Seventeenth Year Book*, pp. 1-45, "Physical Training Department," with tables of measurements; *Eighteenth Year Book*, pp. 152-81, "Short Notes in Anthropology;" also pp. 183-9, "Innovations During the Year," with tables of measurements; *Twenty-first Year Book*, pp. 140-50, "Physician and Physical Training Supervisor's Report;" *Mental and Physical Conditions of Childhood* (Committee on Report on Scientific Study of the); Oppenheim, *Development of the Child*, "Anthropometry;" Seaver, *Anthropometry and Physical Examination*; Uffelmann, *Domestic Hygiene of the Child*, pp. 1-12, "Anthropometry—Examination of the Child;" Warner, *Growth and Means of Training the Mental Faculty*, pp. 126-62; also *Study of Children*, "Anthropometry" and "Degeneracy," pp. 97-118, 238-50.

HYGIENE—PUBLIC, SCHOOL, HOME, PERSONAL.

Briggs, *Modern American School Buildings*, pp. 155-218; Burgerstein and Neolitzky, *Handbuch der Schul-Hygiene*; Burnham, *Pedagogical Seminary*, Vol. II, p. 67, "School Hygiene;" also "School Hygiene and Diseases" in Appleton's *Universal Cyclopaedia*; Cohn, *Hygiene of the Eye in Schools*; Farquharson, *School Hygiene and*

Diseases Incidental to School Life; Fitz, *Bed Posture as an Etiological Factor in Spinal Curvature*; also *Hygiene of Instruction in Elementary Schools*; Gardener, *Town and Country School Buildings*; Massachusetts Board of Health, *Tenth Annual Report*, pp. 87-109, "Home Hygiene;" also *Thirteenth Annual Report*, and *Nineteenth Annual Report*; Newsholme, *School Hygiene*, pp. 3-11, 12-16, 21-45, and 116-30; Parkes, *Practical Hygiene*; Scudder, Special Report on Seating of Pupils in the Public Schools; Uffelmann, *Domestic Hygiene of the Child*, pp. 128-52; Woodbridge, *Report of Connecticut Board of Education*, 1898, pp. 337-64, "School House Warming and Ventilation."

LIBRARY ECONOMY.

IRENE WARREN.

THE aim of this course is to acquaint teachers with the most economical use of books and libraries, and to present enough of the principles of library economy to enable the teachers to organize and economically to administer their own school libraries. The class will meet every day during the last four weeks of the summer course. Students taking this course are advised to take the bookbinding also, although either may be carried separately.

Exhibits of books and material will be made during the course, and students are urged to leave sufficient time on their program for careful examination of the material presented. The following is a brief outline of the work:

I. *Preparation of books for the shelves*.—Marks of ownership. Labels.

II. *Accession book*.—A certain number of books will be assigned pupils to accession.

III. *Classification*.—The work will be based on the Dewey "Decimal Classification." Books will be given students to classify. The adaptation of the scheme to a school library will be discussed.

IV. *Cataloguing*.—The cataloguing will be based on the "New York State Library School Rules." Each student will be assigned a certain number of books to catalogue. The cards will be corrected and returned, so that each may have a small sample catalogue for future reference.

V. *Arrangement of books on shelves*.—Shelving. Accessibility to readers. Shelf labels.

VI. *Reference work*.—Use of reference-books. Dictionaries. Cyclopedias. Yearbooks. Periodical indexes. Bibliographies of special subjects. Preparation and distribution of bulletins and reference lists. Reference and reserve shelves.